

3 SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a typical fashion as a customer would normally use it. The system had each port connected to an appropriate peripheral for the purposes of testing a typical configuration.

3.2 EUT Exercise Software

No special software was needed to test the EUT.

3.3 Special Accessories

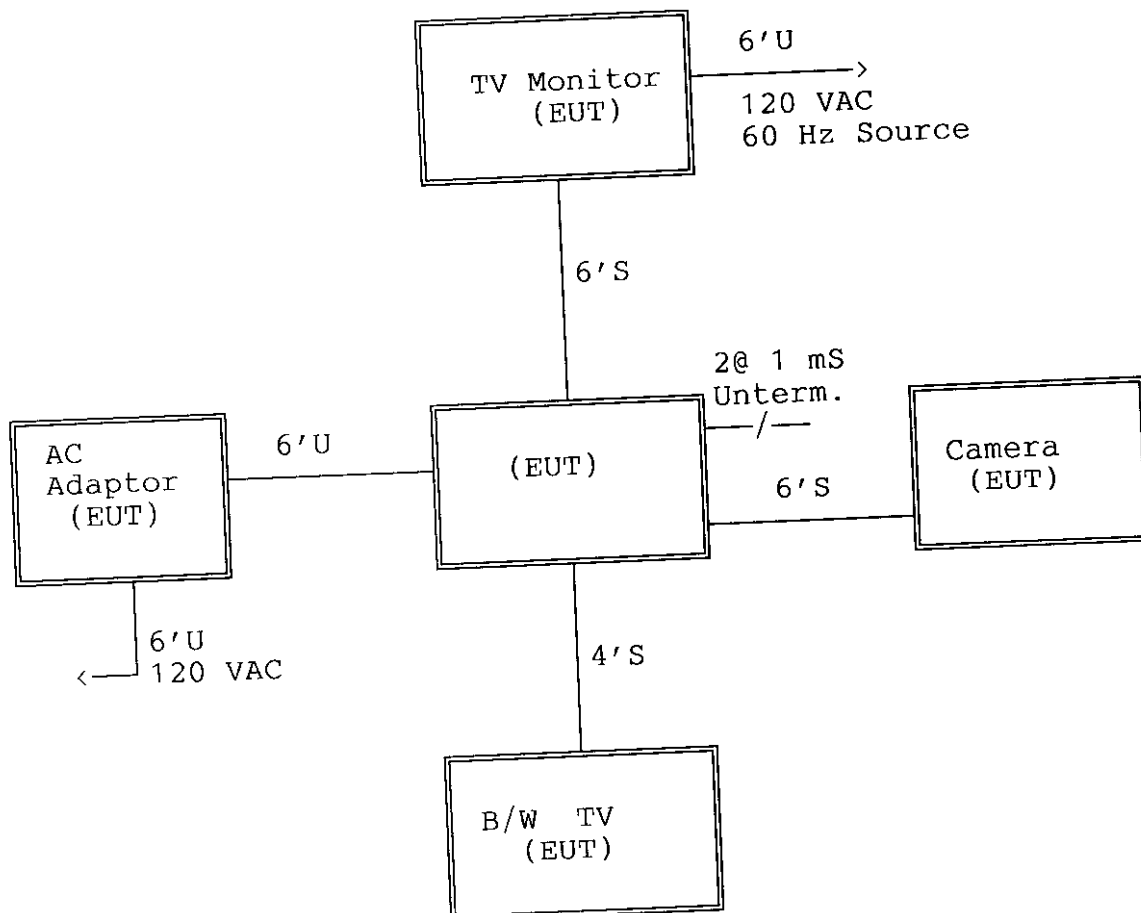
All interface cables used for testing are shown in **Figure 3.1**.

3.4 Equipment Modifications

No modifications were necessary to bring the EUT into compliance with FCC Part 15, Class B requirements.

3.5 Configuration Of Tested System

Figure 3.1
Configuration of Tested System



6 CONDUCTED EMISSION DATA

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The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are recorded.

Test Date: March 26, 1998
UST Project: 98-116
Customer: Magnisight, Inc.
Model: Portable Mini Reader System Model X-MRS-7

FREQUENCY (MHz)	TEST DATA (dBm)		RESULTS (uV)		FCC LIMITS (uV)
	PHASE	NEUTRAL	PHASE	NEUTRAL	
0.51	-72.0	-73.0	56.2	50.1	250
1.7	-77.0	-78.0	31.6	28.2	250
9.9	-78.0	-88.0	28.2	8.9	250
15.8	-80.0	-82.0	22.4	17.8	250
24.1	-71.0	-72.0	63.1	56.2	250
28.6	-76.0	-79.0	35.5	25.1	250

Sample Calculations:

Results uV = Antilog $((-72 + 107)/20) = 56.2$

Conversion from dBm to dBuV = 107 dB

Tester

Signature: 

Name: Erik Collins

7 RADIATED EMISSION DATA

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7.1 The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, plus the limit.

Test Date: March 26, 1998
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Model: Portable Mini Reader System Model X-MRS-7

Frequency (MHz)	Polarity (V/H)	Receiver Reading (dBm)	Correction Factor (dB)	Corrected Reading (uV/m)	3 Meter Limit (uV/m)
35.6	V	-89.0*	14.3	41.2	100.0
47.4	V	-84.0*	12.2	57.3	100.0
48.0	V	-87.0	12.1	40.2	100.0
123.1	V	-85.0	14.2	64.8	150.0
200.0	H	-85.0	15.1	71.6	150.0
219.0	H	-84.0	15.0	79.7	200.0

* = Quasi Peak

Tester

Signature: 

Name: Erik Collins

7.2 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + CF - AG$$

where

FS = Field Strength

RA = Receiver Amplitude

CF = Correction Factor
= Antenna Factor + Cable Loss

AG = Amplifier Gain

$$FS (\mu V/m) = \text{Antilog} [(-89.0 + 14.3 + 107) / 20] = 41.2$$

8 MEASUREMENT OF MAXIMUM RF OUTPUT LEVEL

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The output level of the EUT was measured across a 75 Ω resistance with the input level supplied by the camera, sold with the system. Channel 4 was also investigated but Channel 3 was worse than Channel 4.

Test Date: March 26, 1998
UST Project: 98-116
Customer: Magnisight, Inc.
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Frequency (MHz)	Measured Reading (uV)	Limit (uV)
Video = 61.25	2114	3000
Audio = 65.71	385.5	671.1

The Limits were calculated as follows:

$$\text{Video Signal Limit} = 346.4 \times \text{SQRT}(75\Omega) = 3000 \text{ uV}$$

$$\text{Audio Signal Limit} = 77.5 \times \text{SQRT}(75\Omega) = 671.1 \text{ uV}$$

Tester
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9 MEASUREMENT OF RF OUTPUT SPURIOUS EMISSIONS

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The RF output emissions of the EUT was measured across a 75 Ω resistance with the input level supplied by the camera, sold with the system. The system was examined in frequency from 30 MHz to 2 GHz for output Channels 3 and 4. Channel 3 was worse than Channel 4. The RBW was set to 30 KHz for all measurements.

Test Date: March 26, 1998
UST Project: 98-116
Customer: Magnisight, Inc.
Model: Portable Mini Reader System Model X-MRS-7

Frequency (MHz)	Measured Reading (μ V)	Limit (μ V)
56.7	24.16	6000
122.4	14.96	94.8

The Limits were calculated as follows:

$$\text{Video Signal Limit} = 10.95 \times \text{SQRT}(75\Omega) = 94.8 \mu\text{V}$$

Tester
Signature: _____

Name: Erik Collins

APPENDIX A

TEST INSTRUMENTS AND ACCESSORIES

TYPE	SPECIFICATIONS	MANUFACTURER	MODEL
SPECTRUM ANALYZER	.1- 1300 MHz	HEWLETT-PACKARD	8558B
SPECTRUM ANALYZER	9 kHz - 22 GHz	HEWLETT-PACKARD	8559E
SIGNAL GENERATOR	.10 - 990 MHz	HEWLETT-PACKARD	8656A
COMB GENERATOR		HEWLETT-PACKARD	8406A
RF PREAMP	.1 - 1300 MHz	HEWLETT-PACKARD	8447D
RF PREAMP	1 - 26.5 GHz	HEWLETT-PACKARD	8449B
BILOG ANTENNA	.03 - 2 GHz	CHASE	CBL6112A
BICONICAL ANTENNA	30 - 200 MHz	EMCO	03104
BICONICAL ANTENNA	30 - 300 MHz	EMCO	3110
LOG PERIODIC ANTENNA	.2 - 1 GHz	EMCO	3146
HORN ANTENNA	1 - 18 GHz	EMCO	3115
LISN 8028-50-TS-24-BNC	120V	SOLAR ELE.	8012